CLAIMS:

1. An interposer for making connections to electrical contact pads on a surface of a microelectronic element defining holes therein, the interposer comprising:

(a) a body having a first major surface, said body having horizontal directions parallel to said first major surface, and vertical directions perpendicular to said first major surface;

(b) a plurality of conductors in said body; and

(c) a plurality of contacts on or above said first major surface, each said contact being permanently joined to one said conductor and extending radially outwardly from the conductor, each said contact having a periphery remote from the conductor and a central portion attached to the conductor;

each said contact being adapted to deform so that the periphery of the contact will contract radially inwardly toward the central portion of the contact in response to urging said periphery of the contact against a contact pad and inserting the central portion of the contact into the hole defined by the contact pad;

whereby said contacts will wipe the contact pads of the microelectronic element when the microelectronic element is juxtaposed with said first surface and forced toward said body.

2. An interposer as claimed in claim 1, wherein each said contact bends vertically downwardly so that the periphery of the contact moves towards the body, as well as

contracting radially inwardly toward the central portion of the contact.

3. An interposer as claimed in claim 2, wherein the periphery of each said contact is spaced vertically above said body, with a gap between the periphery of said contact and said body.

4. An interposer as claimed in claim 2, wherein said body is deformable at least near the periphery of each said contact, whereby said movement of said periphery toward said body causes said periphery to engage and deform said body.

5. An interposer as claimed in claim 2, wherein said body further comprises an adhesive layer on said first major surface for adhering said interposer to said microelectronic element.

6. An interposer as claimed in claim 5, wherein said contacts are disposed on said adhesive layer.

7. An interposer as claimed in claim 6, wherein said adhesive layer has a thickness beneath said contacts greater than a thickness of said adhesive layer between said contacts.

8. An interposer as claimed in claim 1, wherein the periphery of each said contact is noncircular.

9. An interposer as claimed in claim 8, wherein each said contact includes a plurality of tabs extending radially outwardly away from the conductor, each said tab having a tip remote from the conductor.

10. An interposer as claimed in claim 9, wherein said tabs of each said contact are disposed in a substantially

symmetrical pattern about the juncture of the contact and the associated conductor.

11. An interposer as claimed in claim 10, wherein each said contact includes four said tabs, and said substantially symmetrical pattern is a quatrefoil pattern.

12. An interposer as claimed in claim 11, wherein said contacts are disposed in a substantially rectilinear grid having rows and columns, and wherein said tabs extend substantially diagonally with respect to said rows and columns.

13. An interposer as claimed in claim 9, wherein said tabs are disposed in a star pattern with tips of said tabs having a circumferential width less than a circumferential width of said tabs near said central portion.

14. An interposer as claimed in claim 9, wherein a circumferential width of said tabs near said tips is greater than a circumferential width of said tabs near said central portion.

15. An interposer as claimed in claim 1, wherein each said contact includes a conductive bonding material adapted to facilitate electrical joining of said tabs to contact pads engaged therewith.

16. An interposer as claimed in claim 15, wherein said conductive bonding material is selected from the group consisting of solders, brazing alloys, diffusion bonding alloys and conductive materials incorporating a polymer.

17. An interposer as claimed in claim 1, wherein each said contact is formed integrally with the associated conductor.

18. An interposer as claimed in claim 17, wherein each said conductor extends substantially perpendicularly to said first surface.

19. An interposer as claimed in claim 1, wherein said conductors are arranged at a pitch of less than about 1.0 mm, from center to center.

20. An interposer as claimed in claim 1, wherein said body defines a second major surface facing in an opposite direction from said first major surface, at least some of said conductors being through conductors having first ends disposed adjacent said first major surface and second ends disposed adjacent said second major surface, at least some of said contacts being permanently joined to said first ends of said through conductors, the interposer further including second-end contacts on or above said second major surface permanently joined to said second ends of said through conductors; each said second-end contact extending radially outwardly from the associated conductor, each said second-end contact having a periphery remote from the conductor; each said second-end contact being adapted to deform so that the periphery of the contact will contract radially inwardly toward the central portion of the contact in response to urging said periphery of the contact against a contact pad of a second microelectronic element and inserting the central portion of the contact into a hole defined by the contact pad; whereby said contacts will wipe the contact pads of the second microelectronic element when the second microelectronic element is juxtaposed with said second surface and forced toward said body.

21. An interposer for making connections to pads on the surface of a microelectronic element, said pads defining holes therein, comprising:

(a) an interposer body having a first surface; and

(b) a plurality of contacts on said body, each said contact comprising a central portion extending through said first surface into said body, and a peripheral portion extending radially from said central portion on or above said first surface, said peripheral portion of each said contact being adapted to bend downward, toward said body, and said central portion adapted to remain substantially undeformed, in response to a force on said peripheral portion directed downwardly toward said body.

22. An interposer as claimed in claim 21, wherein said central portion is substantially cylindrical.

23. An interposer as claimed in claim 21, wherein said peripheral portion comprises a plurality of tabs extending radially from said central portion.

24. An interposer as claimed in claim 21, further comprising a deformable layer between said first surface and said peripheral portions of said contacts.

25. An interposer as claimed in claim 24, wherein said deformable layer is an adhesive layer.

26. An interposer as claimed in claim 21, wherein said peripheral portion and said first surface define a gap therebetween.

27. An interposer for making connections to electrical contact pads on a surface of a microelectronic element, the interposer comprising:

(a) an interposer body having a first surface; and

(b) a plurality of contacts on said body, each said contact including a central portion and a plurality of tabs extending radially outwardly from the central portion, all of said tabs extending over said first surface, each said tab being adapted to deform radially inwardly, toward the central portion, in response to a force on such tab directed downwardly toward said body.

28. An interposer as claimed in claim 27, in which the tabs of said contacts have top surfaces facing upwardly away from said body and asperities on such top surfaces, whereby said asperities will engage and wipe a contact pad engaged with the contact.

29. A method of making a microelectronic interposer comprising the steps of:

(a) providing a body defining a first surface;

(b) providing a first temporary layer over said first surface;

(c) forming apertures passing through said body and said temporary layer;

(d) depositing a layer of an electrically conductive structural material in each said aperture and over said temporary layer proximate said aperture to thereby form contacts; and

(e) removing said temporary layer, leaving said contacts with outwardly flaring peripheral portions spaced vertically above said first surface of said body.

30. A method as claimed in claim 29, further comprising the step of depositing a first layer of adhesive on said first surface of said body before providing said first temporary layer, said temporary layer being provided over said adhesive layer, whereby said adhesive layer is left exposed after said step of removing said temporary layer.

31. A method as claimed in claim 30, wherein said adhesive layer is formed from an adhesive selected from the group consisting of thermoplastic adhesives and b-staged adhesives.

32. A method as claimed in claim 30, wherein said adhesive layer is formed from a thermoplastic selected from the group consisting of polyimide and polyetherimide.

33. A method as claimed in claim 29, wherein said temporary layer is formed from a metal selected from the group consisting of aluminum, tin, and nickel.

34. A method as claimed in claim 29, wherein said body further defines a second surface opposite said first surface; said method further comprising the step of providing a second temporary layer over said second surface; said apertures passing through said second temporary layer; and said deposited structural material extends over said second temporary layer proximate said apertures to thereby form second contacts.

35. A method of making a microelectronic interposer comprising the steps of:

(a) providing a body defining a first surface;

(b) providing a first compliant layer over said first surface;

(c) forming apertures passing through said body and said compliant layer;

(d) depositing a layer of an electrically conductive structural material in each said aperture and over said compliant layer proximate said aperture to thereby form contacts with outwardly flaring peripheral portions on said compliant layer.

36. A method as claimed in claim 35, wherein said compliant layer comprises an adhesive.

37. A method as claimed in claim 35, further comprising partially etching said compliant layer whereby said compliant layer has a thickness under said contacts greater than a thickness between said contacts.

38. A circuit assembly comprising an interposer and a circuit panel having contact pads defining holes, a first surface of said interposer confronting a surface of said panel, said interposer having a body defining said first surface and conductors having ends adjacent or above said first surface and having a contact at each said conductor end, each said contact including a peripheral portion extending generally horizontally from the associated conductor end, said peripheral portions of said contacts confronting the contact pads on the circuit panel facing said interposer, said conductor ends received within said holes defined by said contact pads, said peripheral portions of said contacts being engaged with said contact pads whereby the peripheral portion

of each contact has contracted radially inwardly toward the associated conductor end so that each said peripheral portion has moved horizontally with respect to the engaged contact pad and has wiped said contact pad.

39. A circuit assembly comprising an interposer having a plurality of electrically conductive contacts on a first surface thereof, a circuit panel having contact pads defining holes, said circuit panel and said interposer stacked in vertically superposed arrangement so that a first horizontally-extensive surface of said interposer confronts a first horizontally-extensive surface of the circuit panel and so that a plurality of electrically conductive contacts on said first surface of said interposer confront the contact pads on the circuit panel facing said interposer forming a stacked panel; and said stacked panel being vertically compressed so as to forcibly engage said contacts with said contact pads whereby said contacts are deformed so that at least a portion of each contact is received within a hole defined by one of said contact pads and at least a portion of each contact engaged with a contact pad has moved horizontally inward and vertically downward with respect to the first surface of the interposer for wiping the contact pad.

40. A multilayer circuit assembly comprising at least one interposer having a body defining first and second surfaces, said interposer including a plurality of conductors each having a conductor end adjacent or above said first surface and having a contact at each said conductor end, each said contact including a peripheral portion extending generally horizontally from the associated conductor end; at

least one circuit panel having contact pads defining holes therein; said circuit panel and said interposer being stacked so that said first surface of said interposer confronts a surface of said panel and said peripheral portions of said contacts confront said contact pads on the circuit panel facing said interposer; and said circuit panel and said interposer compressed together such that said conductor ends have entered said holes defined by said contact pads, and said peripheral portions of said contacts have forcibly engaged said contact pads whereby said peripheral portion of each contact has contracted radially inwardly toward the associated conductor end so that each said peripheral portion has moved horizontally with respect to the engaged contact pad for wiping said contact pad.